Alg. 2 Warm Up #11-4

(Graphing calculator)

Solve by graphing:

$$20x + 1 = 3^x$$

1. What two equations should you enter?
2. How many intersections are there?
3. How can you refine your window?
4. What are the intersections?
5. What are the solutions to the original equation?
6. Is there an algebraic method to solve this kind of equation?

HW Questions

Review & Preview

4-22. Solve $(x-3)^2 - 2 = x + 1$ graphically. Is there more than one way to do this? Explain.

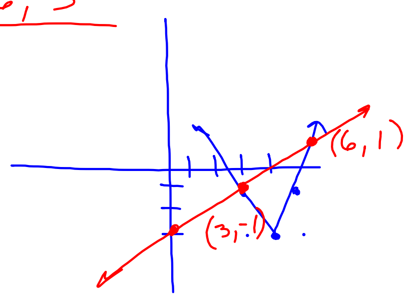
$+2 \qquad +2$

$(x-3)^2 = x + 3$

4-23. Graph a system of equations to solve $\boxed{2|x-4| - 3 = \frac{2}{3}x - 3}$. Show your solutions clearly on your graph.

$y = 2|x-4| - 3 \qquad y = \frac{2}{3}x - 3$

$x = 6, 3$



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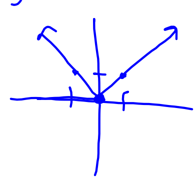
$y = |x|$



$\boxed{\text{Math}}$

$y = 2*abs(x - 4)$

4-24. Solve each of the following equations using any method. Be sure to check your solutions.

a. $-3\sqrt{2x-5}+7=-8$

$$\frac{-3\sqrt{2x-5}}{-3}=\frac{-15}{-3}$$

$$\sqrt{2x-5}^{\,2}=5^2$$

b. $2|3x+4|-10=12$

$$2|3x+4|=22$$

$$|3x+4|=11$$

-11 0 11

$3x+4=-11$ $3x+4=11$

4-25. Ted needs to find the point of intersection for the lines $y=18x-30$ and $y=-22x+50$. He takes out a piece of graph paper and then realizes that he can solve this problem without graphing. Explain how Ted is going to accomplish this, and then find the point of intersection.

n	1	2	3	4
	2,	$a-b$,	$a+b$,	35, ...

4-26. Consider the arithmetic sequence 2, $a-b$, $a+b$, 35, ... Find a and b.

+d +d +d

(d) common difference

$2+3d=35$

$3d=33$

$d=11$

② $35-11=a+b$

$24=a+b$

① $2+11=a-b$

$13=a-b$

$$\begin{array}{r} 24=a+b \\ 13=a-b \\ \hline 37=2a \end{array}$$

$a=\frac{37}{2}$

Now plug in to find b.

4-27. Solve the following equations. Be sure to check your answers for any extraneous solutions.

a. $\sqrt{2x-1}-x=-8$

b. $\sqrt{2x-1}-x=0$

$(\sqrt{2x-1})^2=(-8+x)^2$

$2x-1=(x-8)(x-8)$

$2x-1=x^2-16x+64$

$0=x^2-18x+65$

$5 \cdot 13$

$0=(x-5)(x-13)$

$x=5$

$x=\cancel{5}\ \boxed{13}$

$\sqrt{10-1}-5\stackrel{?}{=}-8$

$3-5\neq-8$

$\sqrt{26-1}-13\stackrel{?}{=}-8$

$5-13=-8$ ✓

4-31. Solve each of the following equations using any method.

a. $2(x+3)^2-5=-5$

b. $3(x-2)^2+6=9$

$-6 \quad -6$

c. $|2x-5|-6=15$

$+6 \quad +6$

d. $3\sqrt{5x-2}+1=7$

$-1 \quad -1$

$|2x-5|=21$

$2x-5=-21$

$2x=-16$

$2x-5=21$

$2x=26$

$\boxed{x=-8 \qquad x=13}$

$3\sqrt{5x-2}=6$

$(\sqrt{5x-2})^2=(2)^2$

$5x-2=4$

$5x=6$

$x=\frac{6}{5}$

$3(x-2)^2=3$

$\sqrt{(x-2)^2}=\pm\sqrt{1}$

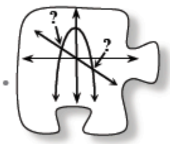
$x-2=\pm 1$

$+2 \quad +2$

$\boxed{x=3,1}$

CP's: 4 - #36 ---> 37 (own paper)

4.1.3 How many solutions are there?



Finding Multiple Solutions to Systems of Equations

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You have used many different solving strategies to find solutions of equations with one variable both algebraically and graphically. You have also worked with systems of two equations with two variables. In this lesson, you will use your algebraic and graphing tools to determine the number of solutions that various systems have and to determine the meaning of those solutions.

4-36. Solve each system of equations below without graphing. For each one, explain what the solution (or lack thereof) tells you about the graph of the system.

a. $y=-3x+5$
$y=-3x-1$

b. $y=\frac{1}{2}x^2+1$
$y=2x-1$

c. $y^2=x$
$y=x-2$

d. $4x-2y=10$
$y=2x-5$

4-37. Now consider the system shown at right.

$x^2+y^2=25$
$y=x^2-13$

a. How many solutions do you expect this system to have? Explain how you made your prediction.

b. Solve this system by graphing. How many solutions did you find? Was your prediction in part (a) correct?

c. Find a way to combine these equations to create a new equation so that the only variable is x. Then find another way to combine $x^2+y^2=25$ and $y=x^2-13$ to form a different equation that contains only the variable y. Which of these equations would be easier to solve? Why?

d. If you have not already done so, solve one of the combined equations from part (c). If solving becomes too difficult, you may want to switch to the other combined equation.

HW: 4-

40 ---> 46